

Treatment.

The treatment of syphilis by mercury has great effect upon the result of the reaction. The consensus of opinion appears to be that if a positive result is obtained further treatment is necessary. In some instances it has been the experience of the writer that a small amount of mercury will cause the disappearance of the reaction, while in other instances the same amount will have absolutely no effect upon it. In hereditary lues the reaction appears to remain a great deal longer regardless of the effect of treatment. In general it can be said that a positive reaction will be obtained regardless of treatment in cases where some manifestations are in evidence. This does not hold in two cases of my series. The disappearance of the reaction a short period after treatment has ceased does not mean a cure. Lesser (*Deut. med. Woch. Berlin*, Jan. 20, XXXVI, No. 3) states that five years should elapse after the last course of treatment without obtaining a positive reaction before a cure can be assured. While this is undoubtedly a long period, it would appear that at least one or two years should elapse, during which period the reaction should be negative, before a definite conclusion concerning the presence or absence of the virus can be formed. The disappearance of a positive reaction under treatment in the early stage of syphilis should not be sufficient grounds for stopping the treatment. Treatment undoubtedly should be carried on until a negative result is obtained after repeated tests. The position of mercury as a specific even in late lues has undoubtedly been strengthened since the institution of the complement fixation reaction. Iodid of potassium and arsenic as well as other alteratives, while holding a definite place, are to be considered as adjuncts.

Summary.

1. The Wasserman and the Noguchi methods are the more reliable of all reported, by reason of the fact that the quantities of each re-agent can be exactly determined.
- 2.—The precipitate tests are not as reliable as the complement fixation reaction.
- 3.—The value of the complement fixation reaction in the diagnosis of syphilis per se and as an etiological factor has passed the stage of experimentation.
- 4.—The reaction is of service as an index to the efficiency of treatment.
- 5.—The results of the test have proved that mercury is the main drug to be relied on during treatment of acute syphilis.

Discussion.

Dr. Kaspar Fischel, San Francisco: The Wasserman reaction is a great help in the diagnosis of our obscure ophthalmological cases. In the case mentioned by Dr. Schmitt—a girl about 15 years old—I had treated the patient ten years ago for keratitis interstitialis syphilis, and later for syphilitic ulcers of the tonsil (congenital). Three months ago she came back with the same trouble which disappeared under inunctions. But in spite of 40 inunctions the Wasserman was positive. While in the case of interstitial keratitis we usually can prove from clinical symptoms syphilis to be the cause, in affections of the optic nerve we sometimes are at a loss to find the etiological factor. In these cases Wasser-

man reaction may give us the necessary clue. When I went to school we were taught that in beginning atrophy, even if it is luetic, mercury should not be used as it will hasten the breakdown of the optic nerve, but the sero-diagnosticians find that mercury and not iodid removes the positiveness of the Wasserman reaction. Further clinical experience will show whether energetic mercurial treatment should be adopted even in these cases. Lately I have observed in two severe syphilitic affections that the most vigorous mercurial treatment, inunctions and injections, did not give relief, while iodid caused in a few days a remarkable improvement. In both these cases iodid had been given before without beneficial effect but later after the system had been saturated with mercury, the iodid was very effective.

Dr. Spiro: According to the remark made by Dr. Schmitt, that the Wasserman is positive even before the initial lesion is present, it would seem that the infection of syphilis, being primarily a blood condition and not at first a local affair, then as it is already in the blood, we hardly need to remove the primary lesion in the futile hope of aborting the infection.

Dr. L. S. Schmitt: Only one case was reported by Butler, in which the reaction was positive before the initial lesion appeared. A number of authorities have reported positive reactions in about one week after the appearance of the initial lesion. In general it can be stated that the reaction is not reliable upon the appearance of the initial lesion unless there is a definite adenitis present.

INSECTS AND MEDICINE—A LECTURE.*

By CREIGHTON WELLMAN, B. A., M. D., Oakland.

Medical entomology, or rather medical arthropodology, is not a new science, but a realization of its far-reaching importance is one of the hopeful signs of the present day.

It is probable that insects were employed medicinally in Egypt during the most ancient times,¹ and several species, especially beetles belonging to the family Dermestidæ, have been found embalmed in mummies, while the traditional virtues ascribed to scarabs are yet believed in by the fellaheen.

Aristotle² mentions various insects, including beetles probably belonging to the genera *Melolontha*, *Carabus*, *Lytta*, etc., in use in his day, and in Pliny³ we find remarks on a long list of species used medicinally or considered noxious, among which have been determined beetles (*Lucanus cervus*, Scarabæidæ, e. g. "green scarabæus" for quartan ague, *Buprestis*, *Blaps mortisaga*, etc.), crickets (*Gryllus*), bugs (*Cimex*), mosquitoes, honey bees, spiders, scorpions, etc., etc. Galen⁴ also mentions various beetles (*Dermestes typographus*, *Scarabæus*), bugs (*Coccus*), spiders and scorpions. Discorides⁵ speaks of a common Lepidopteron (*Papilio brassicae*) and also of grasshoppers, blister beetles (*Mylabris*), spiders, etc.

Later the Arabian physicians, notably El Scherif and El Mansuri,⁶ frequently mention such insects as lice and bugs and developed the use of kermes (*Coccus ilicis*) for various ailments.

Still later as printing arose, while many such as Schäfer of Regensburg⁷ still wrote much of ento-

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mological *materia medica*, attention began to be fixed more and more on clinical entomology as it may be termed. Such authors as Wietzel,⁸ Heize⁹ and Stentzel and Vaghi¹⁰ are typical of this movement.

A great landmark not only in the history of medical entomology, but also of medical zoology, was the work of Brandt and Ratzeburg.¹¹ In these still remarkable volumes not less than 142 quarto pages and 14 beautiful plates are devoted to an admirable discussion of the medical aspects of entomology.

A number of general works on medical zoology¹² contain more or less complete notices of insects. A list of these would not be of particular interest and all are, or should be, easily accessible.

The most complete resume of our knowledge of insects as disease carriers is the monograph of Nuttall¹³ which digests the literature up to the date of its publication.

A glance through the literature of the subject shows that we have had three main movements among the students of medical entomology. These may be loosely described as the era of entomological *materia medica*, the era of clinical entomology and the era of pathological entomology.

Of the first of these it will not be necessary to say anything further, as, with the exception of cantharides and one or two other remedies, we retain but few of these formerly used substances in our lists, and our interest in the subject thus becomes largely historical. Of the second subject it will be useful to speak a few words, because the conditions included are always of interest to the physician. Mention might be made of the great mass of literature on the subject of scabies,¹⁴ reaching from Aristotle to our own time. The subject of myiasis,¹⁵ too, has attracted attention, especially since about 1840. Records of fly larvae in the nose,¹⁶ ear,¹⁷ urethra,¹⁸ intestinal canal,¹⁹ wounds,²⁰ skin,²¹ etc., are also interesting. Among other insects the South American and African chigger²² likewise invades the human body, and probably the most formidable of all such parasites are the Arachnid *Linguatulidae*.²³ Considerable attention has also been directed to venomous insects. For instance, we read of severe symptoms,²⁴ new growths²⁵ and even death²⁶ following on the bites or stings of these creatures.

But the most interesting and important is what we have called pathological entomology, in other words the investigation of insects as disseminators of parasitic disease. Among such there are the midges,²⁷ which are believed to carry a recently described febrile disease. Mosquitoes have been shown to be responsible for yellow fever,²⁸ dengue,²⁹ filariasis³⁰ and malaria.³¹ No less than 33 species are known to carry this last disease.³² House flies³³ and their

allies have been convicted of disseminating enteric fever,³⁴ tuberculosis³⁵ and the ova of intestinal worms,³⁶ and probably ophthalmia³⁷ and other diseases. I have found motile and encysted amebæ in the intestinal contents of flies and see no reason why some of these may not be pathogenic forms, as amebic dysentery is not rare in the region of San Francisco bay and infected feces are doubtless sometimes accessible to flies. Fleas are known to transmit bubonic plague³⁸ and sleeping sickness³⁹ is spread by means of the Tse-tse flies. Kala-azar⁴⁰ is almost certainly carried by bed bugs. Relapsing fever is disseminated by bed bugs⁴¹ and ticks,⁴² and spotted fever⁴³ by these last named animals. Other insects have been laid under suspicion as disease carriers and the foregoing are only illustrative.

The literature of medical entomology is enormous and a catalogue of the principal titles alone would occupy more space than the columns of this entire issue of the JOURNAL. A card index of the publications which happen to come to my notice, which was begun some time ago, is growing to a considerable size.

Later we shall study in detail some of the points to-day mentioned and make for ourselves experiments illustrating their elucidation. On this occasion I shall be satisfied if I have impressed you with the greatness and significance of the problem presented.

In taking up a study of disease bearing insects we must distinguish between the manners in which various species subtend disease parasites or germs. An insect may be a mere mechanical vector,⁴⁴ such as fleas in the case of plague or flies in typhoid and tuberculosis, or it may act only as an intermediate host as in the case of mosquitoes and filarial disease. In other diseases, such as malaria, the insect is the true definitive host for the parasite.

It is with these principles in mind that we shall approach the questions before us. Here in the bay cities we have an abundance of material for such investigations, cases of malaria, filariasis, intestinal parasites, the various bacterial diseases above mentioned, etc., all being available.

There should be, however, a study collection of the indigenous insects of possible medical significance accessible here in California, and with the idea of founding such a collection for future students, I am sending out a request for help to the medical and other scientific men of the state. I conclude the abstract of this lecture by reprinting this circular, and I hope that all my readers will aid in this necessary undertaking:

"THE COLLECTION OF DISEASE-TRANSMITTING
INSECTS, ETC.

"A very important work bearing upon the prob-

lem of Tropical Disease on this Coast is the determination and study of the insects, ticks and mites which are parasitic upon man and animals. In order to aid in this valuable work the undersigned will receive specimens and answer inquiries regarding these creatures. It is hoped that the physicians and entomologists of the state will co-operate by sending mosquitoes, biting flies, ticks, fleas, bugs, mites, etc., which should be prepared according to the following directions and accompanied by an explanatory letter. Collections will be immediately acknowledged on receipt. In many cases it will be necessary to refer specimens for identification to experts on particular groups, but the determinations of the species sent, with information regarding their medical significance, will in all cases be returned to collectors as soon as possible.

"DIRECTIONS FOR SENDING SPECIMENS.

"Flies, Mosquitoes and Other Winged Insects.—Kill with chloroform, ether, or in a cyanide bottle. Wrap each specimen rather loosely, before it dries, in soft tissue paper. Pack not too tightly in a small strong box which should be wrapped in several layers of thick paper. Avoid as much as possible handling the insects.

"Ticks, Bugs, Fleas and Other Wingless Forms.—Drop alive into a small bottle containing ordinary alcohol. Wrap the bottle in cotton and pack in a small strong box as above.

"Send by mail marked 'Fourth class matter.'

"Specimens and correspondence concerning them may be addressed to

"DR. CREIGHTON WELLMAN,

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31st and Grove Sts., Oakland, Cal."

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REPORT OF A CASE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.*

By F. G. CANNEY, M. D., San Francisco.

It was with extreme gratification that I witnessed the specific action of another antitoxin, which to my mind heralded another triumph in internal medicine through the agency of the bacteriological laboratory. This time it falls to an American, Dr. Simon Flexner, to receive the great honor of making this triumph possible. No less a conservative man than Dr. Flexner would before now have proclaimed his research to the world, but he modestly awaits further confirmation.

The case I wish to report is Roy Z., aet 14. The lad is an unusually robust boy, having had no disease of sufficient gravity to call a physician for several years. He had just graduated from the grammar school. His residence had been for many years past continuously in the city of San Francisco. Immediately preceding the sickness I am about to report, he had been having some dental work done, and the slight malaise of which he had complained for about one week preceding this outbreak was attributed to this cause entirely. During the night of December 23, 1909, he had had a considerable fever, judging from his reported restlessness. He had an intense desire to void urine, but was afraid to pass out of his room to the toilet, for fear of falling. He had called frequently to his aunt, but as the rest of the family had their rooms somewhat apart from his, he was not heard. He, however, finally did rise, for his aunt found him on the floor about 6 o'clock in the morning in an unconscious condition. The aunt called one of his sisters, and after great difficulty he was finally put into bed. On arriving at the house about 7 o'clock that morning, I found the lad being held in bed by main force. He kept up a continual bellowing, and cursed every person who tried to restrain him. The evident desire of the lad was to expose his sexual organs, not from any sensual desire, but probably from retention of urine he was uncomfortable. During the next twenty-four hours he avoided urine only involuntarily, which occurred several times. The lad had always been mild-mannered and well behaved, and the violent and continual cursing was in marked contrast to his normal self.

On the following morning, December 25th, he appeared rational, but the occurrences of the preceding day were a complete blank. He now complained of a severe frontal headache. The temperature by mouth was 104, pulse 120. He vomited two or three times during the day. There were no other symptoms, and those present were insufficient upon which to base any diagnosis.

On December 26th he complained of severe occipital headache, the pain extending down between the scapulae. He also presented marked retraction of the head, the pain being greatly intensified by the

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